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## TRANSMITTAL FORM

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Total Number of Pages in This Submission

Application Number	08/970,066
Filing Date	November 13, 1997
First Named Inventor	Pradeep K. Dhal et al.
Art Unit	1756
Examiner Name	M. J. Angebrannt
Attorney Docket Number	8232-CPA

### ENCLOSURES (Check all that apply)

- ☒ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53

- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
  - ☐ Petition to Convert to a Provisional Application
  - ☐ Power of Attorney, Revocation
  - ☐ Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
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- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☒ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Other Enclosure(s) (please identify below):

Remarks

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name POLAROID CORPORATION

Signature

Printed name

Gaetano D. Maccarone

Date

January 24, 2005

Reg. No.

25,173

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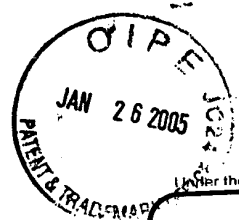
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## FEE TRANSMITTAL For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 500.00

### Complete if Known

Application Number	08/970,066
Filing Date	November 13, 1997
First Named Inventor	Pradeep K. Dhal et al.
Examiner Name	M. J. Angebranndt
Art Unit	1756
Attorney Docket No.	8232-CPA

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### FEE CALCULATION

#### 1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

#### 2. EXCESS CLAIM FEES

##### Fee Description

Each claim over 20 (including Reissues)

Each independent claim over 3 (including Reissues)

Multiple dependent claims

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
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- 20 or HP = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
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- 3 or HP = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

HP = highest number of independent claims paid for, if greater than 3.

#### 3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
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#### 4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge): Filing a brief in support of an appeal

500.00

### SUBMITTED BY

Signature

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Date January 24, 2005

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Appl. No. 08/970,066  
Reply Brief dated January 24, 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 08/970,066 Confirmation No.: 2141  
Applicant(s): Pradeep K. Dhal et al.  
Filed : November 13, 1997  
Title : HOLOGRAPHIC MEDIUM AND PROCESS  
: FOR USE THEREOF  
TC/A.U. : 1756  
Examiner : M.J. Angebranndt  
  
Docket No. : 8232-CPA  
Customer No.: 20349

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**REPLY BRIEF**

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Sir:

This is appellants' Reply Brief in response to the Examiner's Answer mailed November 22, 2004 in the appeal taken from the final rejection of claims 28 - 40 of the application as set forth in the Office Action, made final, mailed October 9, 2003.

Pursuant to 37 CFR §§ 1.7 and 1.193 this paper is due on January 24, 2005 (since January 22, 2005 is a Saturday).

## **RELATED APPEALS AND INTERFERENCES**

Appellants note the reference by the examiner to the decision by the Board of Appeals in Appeal No. 2000-1709 which was taken with respect to the method claims previously examined in the application (the present application is a Divisional/Continued Prosecution Application).

The examiner has stated that the prior appeal "... may (emphasis added) have a bearing on the pending appeal." It is noted that the claimed subject matter in the present appeal is different from that of the prior appeal and is based on a different record. Thus, there are different issues presented in this appeal and the findings of the Board of Appeals in the previous appeal are not binding in the present appeal.

## **STATUS OF CLAIMS**

The statement of the status of claims as recited in the Examiner's Answer is correct in view of the withdrawal of two grounds of rejection.

## **ISSUES**

The statement of the issues which appears in the Examiner's Answer is correct.

Upon review of the Answer, it has been noted that in the Appeal Brief, the statement of Issues (d), (e) and (f) inadvertently omitted mention of U.S. 5,418,016 ("Conforth et al") which is one of the references relied upon to support these rejections. This inadvertent error was also present in the Amendment After Final and was carried through to the Appeal Brief.

Appellants' undersigned attorney regrets this inadvertent error. The correction made by the examiner is appreciated.

## **REBUTTAL ARGUMENT**

### **I. The Affidavit**

The Affidavit Under 37 CFR § 1.132 of David A. Waldman, one of the applicants in the application, will be discussed initially since the showing made therein applies to all the remaining grounds of rejection as they are all obviousness rejections. The substance of the affidavit and the conclusions drawn from the results

reported therein are discussed in detail in the Appeal Brief (see pages 15 - 17).

The showing of the affidavit will be summarized here for convenience. The affidavit presents data relating to the formation of volume holograms by cationic polymerization for a composition which includes only a difunctional epoxide monomer (the "prior art") and for two compositions according to the present invention, one of which includes the same difunctional epoxide monomer and a tetrafunctional epoxide monomer and the other of which includes the same difunctional epoxide monomer and a trifunctional epoxide monomer.

The data show conclusively that the fact that the volume holographic recording media according to the invention provide stable volume holographic formation with a much lower threshold exposure fluence and a much earlier time period than the volume holographic recording medium of the prior art is unexpected in view of the prior art teachings. The data also show that the unexpected differences in the results obtained for the volume holographic recording media according to the invention are due to the combination of the difunctional and polyfunctional epoxide compounds since the reactive groups in each compound are identical.

The affidavit also presents data relating to the volume change (shrinkage) of liquid monomers and the solid polymerized films of the monomers for a difunctional epoxide monomer, a trifunctional epoxide monomer and a tetrafunctional epoxide monomer, each of

the monomers having the same chemical structure for the epoxy grouping. The data show significantly reduced volume shrinkage for the films made with the tri- and tetrafunctional epoxide monomers in comparison to the film made from the difunctional epoxide monomer.

The examiner's comments with respect to the showing made in the affidavit appear on page 11 of the Answer. The examiner has stated

The applicant is correct in asserting that the addition of higher functionality monomers results in increased sensitivity/speed in the composition.

and

The examiner's position is that the increased speed/sensitivity is an obvious result of adding polyfunctional monomers based upon the teachings of Conforth et al. '016.

Appellants submit that the teachings of Conforth et al. do not support such a conclusion with respect to the claimed volume holographic recording medium. Conforth et al. is directed to radiation curable compositions suitable for use as pigmented or unpigmented coatings, printing inks, adhesives and other applications (see column 1, lines 13 - 15). The reference does not relate to volume hologram recording members. Although it is correct that Conforth et al teaches that high functionality monomers give rapid cure speeds and high crosslink density, this teaching must be construed in the context of the types of compositions

described therein. These compositions are not described as being intended for the purpose of forming volume holograms.

The experimental results recited in the affidavit submitted by appellants are not obvious in view of the prior art teachings. Those skilled in the art of volume holographic recording compositions would not find any teachings in Conforth et al or any of the other references which would lead to the expectation that a specific combination of difunctional and polyfunctional monomers would provide stable volume holographic formation with a much lower threshold exposure fluence and at a much earlier time period.

## **II. Issue (c).**

With respect to the rejection of claim 28 as being obvious in view of Meier et al, it is asserted at page 5 that

It would have been obvious to one skilled in the art to add a binder to the compositions of example 3 to render the composition aqueous developable.

This ground of rejection is discussed in detail at pages 19 and 20 of the Appeal Brief.

Appellants' claimed volume holographic recording medium requires a particular binder material. The claim recites specifically that the binder does not inhibit cationic polymerization of the difunctional and



polyfunctional monomers or oligomers and that the refractive index of the binder is significantly different from that of the monomers and oligomers.

At page 8 of the Examiner's Answer, it is stated:

The applicant also implies that the binders disclosed by Meier et al do not meet the limitations.

Appellants' position has been stated in the Appeal Brief, i.e., the teaching of Meier et al. does not suggest to those skilled in the art to add to any composition the specific type of binder material recited in claim 28.

At page 9, the argument has been made by the examiner that:

... as the chemical composition of the binder and the polymerized monomers are different, they would be expected to have different properties, including refractive indices.

This conclusory statement is mere speculation and, further, does not go to the issue presented by the rejection.

The question to be answered is not whether those skilled in the art, knowing of example 3 of Meier et al, would find it obvious to add to the composition recited therein any binder but rather whether they would find it obvious to add to the composition a binder such as that required in the claimed volume holographic

recording material of appellants. Since Meier et al describes compositions for use as photoresists those skilled in the art would find no reason to add to the composition in example 3 a binder of the type required by claim 28 for a volume holographic medium.

It is also stated, at page 9:

...resist materials are known in the art  
to be useful in forming volume holograms  
as disclosed in Haugh et al. 3,658,538...

Although Haugh et al is not specifically cited against claim 20 in this rejection, the examiner notes that this reference was cited in the Office Action of October 9, 2003. It is believed that the examiner intended to refer to U.S. 3,658,526 which was cited in that Office Action.

Haugh et al '526 does teach that photopolymerizable materials can be used to make holograms. The compositions of Haugh et al include binder material. However, this reference does not single out the type of binder material which is specified in the present claims.

Those skilled in the art and knowing of Haugh et al and Meier et al would not find any reason to add to the composition in example 3 of Meier et al a binder of the type recited in the present claims in order to form a volume holographic recording medium.

### **III. Issue (d).**

With respect to the rejection of claims 28 - 31, 39 and 40 as being obvious in view of Dhal et al,

in view of Ohe et al, Keys et al and Cornforth et al, the arguments which appear on pages 9 and 10 of the Answer focus on volume shrinkage. It is the position of appellants that the references do not teach the overall properties of the volume holographic recording material recited in these claims, including the ability to provide stable volume holographic formation with a much lower threshold exposure fluence and at a much earlier time period.

At page 10 of the Answer, the examiner has stated

The applicant is incorrect in asserting that the Ohe et al. reference only forms a latent image

This statement does not accurately describe appellants' remarks with respect to this reference.

The Appeal Brief discusses Ohe et al at pages 21 and 22. At page 21, appellants stated

It is important to recognize that this reference teaches that when the medium is subjected to holographic exposure radical polymerization occurs and only a latent image is formed. Subsequent application of heat is required to actually produce a volume type phase hologram.

The disclosure of this reference clearly teaches a method wherein radical polymerization occurs first upon holographic exposure and application of heat is required to actually produce a volume type phase hologram.

The examiner also has referred to example XXXVI of the Haugh et al reference as illustrating that

in photopolymerizable systems, the interferometric image is immediately readable after formation. Appellants statement concerning the formation of a latent image was made specifically with respect to the method of Ohe et al. That example XXXVI of Haugh et al describes viewing a hologram during formation does not have any effect upon the teachings of Ohe et al which specifically teaches the application of heat to produce a volume type phase hologram.

The examiner has also correctly pointed out that the present claims are not directed to a method and therefore cannot exclude a post exposure processing step. Nevertheless, the claimed volume hologram recording medium does not require such a post processing step and therefore is different from that of Ohe et al.

The examiner has also referred to the decision affirming the examiner in Appeal No. 2000-1709 and pointed out that the decision also noted that the appellants, in that appeal, had not provided any objective evidence to rebut the rejections of record in that appeal.

As discussed in detail above, appellants have provided objective experimental evidence by way of affidavit, which is in the present record, to rebut the present rejections. The affidavit illustrates factually by way of experimental results that a volume holographic recording medium according to the invention provides stable volume holographic formation with a much lower threshold exposure fluence and a much earlier time

period than the volume holographic recording medium of the prior art.

The presently claimed subject matter includes the limitation

wherein said recording medium is essentially free from material capable of free radical polymerization

This limitation was not present in the claims in Appeal No. 2000-1709. It is noted that the rejection of claims 28 and 30 based on Watt (Issue B) was withdrawn on the basis of this limitation.

The scope of the present claims is such that the findings in the previous appeal are not binding on the issues presented in the present appeal. The present claims must be considered on the present record. Here, it has been shown that the method of Ohe et al involves radical polymerization and the method of Keys et al involves free radical polymerization and therefore the compositions used therein include materials which permit such polymerization to take place.

#### **IV. Issue (e).**

With respect to the rejection of claims 28 - 31, 39 and 40 as being obvious over Dhal et al, in view of Ohe et al, Keys et al, Cornforth et al and Sato et al, in response to appellants' argument that it would not be obvious to take a portion of the teachings of Ohe et al, Keys et al and Sato et al (i.e., only the teachings with respect to cationically curable materials

or polyfunctional monomers), the examiner has stated, at page 12:

This position conflicts with the previous appeal decision and neglects the teachings of Dhal et al with respect to using only cationically curable materials...

The position taken by appellants does not conflict with the previous appeal decision. As pointed out above, the previous appeal decision was based on method claims where the materials used in the method were of a different scope than the recording materials recited in the present claims.

Since the recording medium recited in the present claims is said to be essentially free of material capable of free radical polymerization the disclosures of the references must be considered in the context of these claims.

The position taken by appellants is consistent with the record in the present appeal and is not in conflict with the previous appeal decision. The teachings of Ohe et al, Keys et al and Sato et al are not restricted to materials which are essentially free from material capable of free radical polymerization and these teachings must be viewed in the context of the overall teachings.

Further, this position does not neglect the teaching of Dhal et al with respect to using only cationically polymerizable materials. The disclosure of Dhal et al has been discussed in detail in the Appeal Brief (see page 21).

**V. Issue (f).**

With respect to the rejection of claims 28 - 40 as being unpatentable under 35 USC § 103(a) over the teachings of Dhal et al in view of Ohe et al, Keys et al, Cornforth et al, Crivello et al and/or Eckberg et al the examiner again has referred to the findings of the Board of Appeals in the previous appeal. Appellants have shown above that these findings are not binding in the present appeal.

In summary it has been shown that the requisite incentives required by governing law for the modification and/or combination of the references to arrive at appellants' claimed volume holographic recording medium are not found in the disclosures of the references. Further, it has been also been shown that appellants have provided objective evidence to rebut the rejections of record.

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Reply Brief dated January 24, 2005

## CONCLUSION

For all of the foregoing reasons, the rejection of claims 28 - 40 under 35 U.S.C. § 103(a) should be reversed and the claims allowed.

Respectfully submitted,



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Appl. No. 08/970,066  
Reply Brief dated January 24, 2005

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Date: January 24, 2005

  
\_\_\_\_\_  
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